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REMARKS

Consideration of the following remarks and reconsideration and withdrawal of the rejections contained in the Office Action dated October 3, 2007 are earnestly solicited.

The present invention relates to the preparation of cellulose ethers from high bulk density raw cotton linters, as opposed to purified cotton linters. These short fiber length materials have unexpectedly high bulk density. Such materials provide a unique composition that are especially well suited for the commercial manufacture of premium quality cellulose ether derivatives by using either slurry or high solids processes thereby resulting in an increased utilization of plant assets without additional investment.

Additionally, the present invention eliminates costly purification of raw cotton linters. An additional surprising benefit of the present invention is that it can provide unique composition comprised of high molecular weight cellulose materials suitable as feedstock for the production of cellulose derivatives.

Claim Rejections – 35 USC § 103

In paragraph 4 of the Office Action, claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 were rejected under 35 USC § 103(a) as being unpatentable over by Henry et al. (US Patent No. 3,085,087) in view of Dearborn (US Patent No. 3,375,245).

The Office Action states that "[T]he instantly claimed process for making a cellulose ether derivative differs from the process of the Henry et al. patent by claiming that the starting material or starting cellulose is in the form of comminuted raw cotton linter fibers having a bulk density of at least 8 g/100 ml and at least 5% of the fibers passes through a US standard sieve size # 10." The Office Action additionally states that "[T]he Dearborn patent...suggests that it is well known in the art to use cotton linters having bulk density of 9.1 lbs./cu. ft. that has a particle size which passes a 20 mesh screen as the starting material for preparation of cellulose products (see Table 1 in column 2). The bulk density of 9.1 lbs./cu. ft. is greater than a bulk density of 8 g/100 ml...."

Applicants respectfully assert that the rejection of claim 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 as being unpatentable over Henry in view of Dearborn is traversed for the reason that the combination of Henry with Dearborn would not result in Applicants' invention, as claimed.

As previously stated by Applicants in their traversal the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 as being anticipated by Henry presented in their response dated July 18, 2007, Henry never discloses or teaches the preparation of cellulose ethers

from high bulk density raw cotton linters, as claimed by Applicants. Henry is directed to an improved liquid medium for use in the production of cellulose ethers. However, when Henry discusses the types of cellulose used in producing cellulose ethers, the cellulose is described as "...chemically purified cotton linters, wood pulp and various other cellulosic materials are satisfactory of use in the process...the preferred ones are purified cotton linters and α-cellulose wood pulp." (Column 6, lines 17-20.). Henry makes no mention of the use of raw cotton linters in general or the raw cotton linter fibers that a bulk density of at least 8 g/100 ml in particular, as taught and claimed by Applicants.

US Patent No. 3,375,245 to Dearborn is directed to "[A] method of making sodium carboxymethyl cellulose from regenerated cellulose in which comminuted regenerated cellulose is mixed with aqueous solutions of chloracetic acid and sodium hydroxide to form a reaction mixture." (Column 1, lines 11-15.)

Dearborn references US Patent No. 2,278,612 as a method for use of a continuous sheet of cotton linters as a possible prior art cellulose starting material. US Patent No. 2,278,612 to Collins et al. describes a method for making cellulose glycolic acid. On Column 2, lines 38-44, Collins et al. states that "[T]he source and nature of the cellulose sheet is of minor importance, though it is preferred in the interests of uniformity, to employ the so-called 'chemical pulps' which are commercially available, specially purified pulps of high alpha-cellulose content derived from either wood or cotton linters."
Applicants respectfully submit that Dearborn does not teach or suggest to a person of ordinary skill in the art to use raw cotton linters as the starting material of the claimed process. In fact, in Table 1, Dearborn is clearly directed to the use of scrap cellophane as a starting material for the production of carboxymethyl cellulose. Since the regenerated cellulose of Dearborn is "...limited to cellulose which has been previously treated to produce cellulose xanthate and dissolved in dilute caustic to produce viscose rayon and/or cellophane" (Column 2, lines 57-61), there would be no teaching or suggestion to a person of ordinary skill in the art to use a raw cotton linters as the starting material for the production of cellulose ether derivative products. In fact, applicants respectfully submit that a person of ordinary skill in the art would view the teachings of Dearborn as teaching away from the use of raw cotton linters, as claimed by applicants, since viscose rayon and/or cellophane are more highly processed materials than even "chemical pulps" or purified cotton linters typically used to produce cellulose ether derivative products. Regenerated cellulose represents a highly processed form of cellulose: it has been purified, chemically derivatized, formed into a sheet and further chemically modified. As such, there are a number of morphological and physical distinctions between regenerated cellulose and the raw cotton linters starting materials presently claimed. Regenerated cellulose has virtually all of its impurities removed. It has been dissolved in a solvent and reformed into a sheet.

Producing a comminuted material with the same bulk density from a cut sheet of regenerated cellulose versus native cut fibers (i.e. raw cotton linters) is comparing very dissimilar materials.

In the Office Action, it is stated that the "...bulk density of 9.1 lbs./cu. ft. is greater than a bulk density of 8 g/100 ml...." Applicants have converted the 9.1 of lbs./cu. ft to the units of g/100 ml as recited in the instant claims as follows:

(9.1 lb/cu. ft.)(1 cu. ft./28316.85 ml)(453.59 g/1 lb)(100) = 14.58 g/100ml

In the present response, applicants have presented new claims 98-103 which clearly recite the bulk density of the loose mass of comminuted raw cotton linter fibers used in the process to produce the cellulose ether derivative product. The lowest value recited in these claims is a bulk density of at least 20 g/100 ml. This value is significantly higher than the value 14.58 g/100ml value recited by Dearborn for cotton linters in Table 1.

Applicants respectfully submit that Dearborn contains no teaching or suggestion to the person of ordinary skill in the art to substitute the high bulk density raw cotton linters as disclosed by applicants for the cellophane or viscose rayon starting materials taught as useful in its process. Dearborn teaches or suggests the use of non-fibrous regenerated cellulose as a starting material and distinguishes this material from fibrous types of cellulose (e.g. raw cotton linters). In fact, applicants respectfully submit that the teachings of Dearborn actually teach away from the use of high bulk density raw cotton linters, since raw cotton linters would necessarily contain extraneous chemicals rather than the more highly processed viscose rayon and/or cellophane which are even more highly processed materials than even "chemical pulps" or purified cotton linters typically used to produce cellulose ether derivative products.

Dearborn selects regenerated cellulose for use as a starting material for making carboxymethyl cellulose "[B]ecause of its non-fibrous nature, the regenerated cellulose need not be in as fine as state of subdivision during etherification as a fiberous type cellulose, and the bulk density of comminuted regenerated cellulose is substantially greater than wood pulp or cotton linters of the same particle size as shown in the following table wherein all of the materials are of a particle size to pass a 20 mesh screen." (Column 1, line 67 to Column 2 line 3). Applicants respectfully submit that the above-cited passage would direct a person of ordinary skill away from using cotton linters since these materials, even when at the same particle size, are not shown to have the bulk densities of the scrap cellophanes recited by Dearborn in Table 1.

Additionally, applicants respectfully submit that Dearborn only discloses cotton linters having a bulk density of 14.58 g/100ml (9.1 lb./cu. ft.) which is significantly below the 20

g/100ml recited in applicants' claims. Applicants respectfully assert that the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 under 35 USC § 103(a) as being unpatentable over Henry in view of Dearborn has been traversed for the reasons as set forth above. Applicants respectfully request withdrawal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 under 35 U.S.C. §103(a) and request the allowance of these claims.

In paragraph 6 of the Office Action, claim 47 is rejected under 35 USC § 103(a) as being unpatentable over by Henry et al. patent in view of Dearborn patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 further in view of Savage (US Patent No. 2,949,452.)

Applicants respectfully submit that while Savage "suggests the preparation of cellulose ethers using cotton linters as the starting material (see column 2, 3rd paragraph) and organic amines as the basic material (see column 2, line 26), it does not teach or suggest to a person having ordinary art the to substitute the high bulk density raw cotton linters as disclosed by applicants but rather provides no particular direction or motivation to with regards to the cellulose source. Savage states that "[A]lthough any form of cellulose may be employed in the process, it should be apparent that the form used must be capable of substantially uniform penetration and of swelling by the basic material at the concentrations and temperatures employed. Cotton linters being readily available, economical, and easy to handle represent a preferred form of cellulose to be used in the process." (Column 2, lines 17-23.) Applicants respectfully submit that if Savage provides any suggestion to a person of ordinary skill in the art, it would be to have a cellulose source which would be "capable of substantially uniform penetration and of swelling by the basic material" and which would not suggest or motivate one to use the high bulk density raw cotton linters as claimed.

Applicants respectfully submit that Savage does not provide the necessary teaching or suggestion lacking in Henry et al. patent in view of Dearborn patent as discussed hereinabove in the traversal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96. Applicants respectfully request withdrawal of the rejection of claim 47 under 35 U.S.C. §103(a) and request the allowance of this claim.

In paragraph 8 of the Office Action, claims 58-62 are rejected under 35 USC § 103(a) as being unpatentable over by Henry et al. patent in view of Dearborn patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 further in view of Newbury et al. (US Patent No. 6,069,355).

The Office Action states that "[I]t would have been obvious to one of ordinary skill in the art ...to initially reduced the viscosity of the cellulose material as suggested in the Newbury et al patent before mixing the cellulose in a slurry for the preparation of an ether

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derivative in view of the recognition in the art, as evidenced by the Henry et al patent in view of the Dearborn patent, cellulose material of low viscosity can more thoroughly be mixed in a slurry which increases the quality of the final product."

Applicants respectfully traverse the rejection of claims 58-62 are rejected under 35 USC § 103(a) as being unpatentable over by Henry et al. patent in view of Dearborn patent further in view of Newbury et al for the reason that the teachings of Newbury do not suggest "cellulose material of low viscosity can more thoroughly be mixed in a slurry which increases the quality of the final product". While Newbury does teach the reduction of the viscosity of cellulose raw material "...by such known techniques as irradiation, steam explosion, chemical treatment ...or enzymatic treatment." (Column 3, lines 1-4), it does not discuss that cellulose material of low viscosity can more thoroughly be mixed in a slurry which increases the quality of the final product. Newbury is concerned with the manufacture of extruded lyocell articles from a solution of cellulose. It is not concerned with increasing the mixing effectiveness of cellulose slurries by reducing the viscosity of the cellulose material. Newbury teaches the reduction of the viscosity of the cellulose raw material to adjust the range of the degree of polymerisation (D.P.) for use in the cellulose solutions, not for use in cellulose slurry mixing. Applicants respectfully assert that Newbury teaches the use of known techniques for the reduction in the cellulose viscosity not to increase the effectiveness of the mixing of cellulose in slurry form but rather to adjust or obtain a desired D.P. profile for its cellulose solutions.

Applicants respectfully submit that Newbury does not provide the necessary teaching or suggestion lacking in Henry et al. patent in view of Dearborn patent as discussed hereinabove in the traversal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96. Applicants respectfully request withdrawal of the rejection of claims 58-62 under 35 U.S.C. §103(a) and request the allowance of these claims.

Amendment to Claims

Applicants have added new claims 98-103 to clearly recite the bulk density of the loose mass of comminuted raw cotton linter fibers used in the process to produce the cellulose ether derivative product.

The basis for these newly presented claims can be found in claims 6-9 as originally presented, now withdrawn, as well as paragraph [0052] of US 2005/0228174 A1.

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CONCLUSION

In view of the reasons set forth above, Applicants respectfully request withdrawal of the above-mentioned rejections of record, and the allowance of all pending claims, and the holding of this application in condition for allowance. If any points remain of issue that may best be resolved though a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the below-listed telephone number.

Except as otherwise stated in the above-noted remarks, Applicants notes that each of the amendments have been made to place the claims in better form for U.S. practice, not to distinguish the claims from prior art references, otherwise narrow the scope of the previously pending claims or comply with the other statutory requirements.

Respectfully submitted,

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